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the ground beneath a large redwood into the form of a trough at the lower end of which he has placed a barrel, and I have it on good authority that in this primitive manner he obtains sufficient water for his needs. However picturesque a "tree-well" may appear, I believe, as does also Prof. W. R. Dudley, of Stanford University, who has studied these conditions for several years, that a receptacle for the water which the tree "combs" out from the fog might be so placed that it would catch nearly all of the water thus retained, in a manner analogous to that employed by the chopper, and from data thus obtained some estimate of the total fog precipitation in a redwood forest might be had. It is hardly necessary to say that in any such calculation the density of the fog, the rate of the wind, as well as the character of the forest, and other factors would have to be considered, all of which could be worked out for each time of calculation.

A comparative study of the amount of water which different species of forest trees are able to take from fog could not fail to be of interest, and may be found to be of great moment in the life processes of the denizens of the region. And may it not be that the increased amount of the total precipitation brought about especially by the redwoods as just described, and its more uniform distribution throughout the year, will prove to be an important and possibly a determining factor in reforesting a denuded redwood area?

## ARE THE LEAVES OF "SIMPLE-LEAVED AMPELOPSIS" SIMPLE?

BY BYRON D. HALSTED

A vine of *Ampelopsis cordata* Michx., growing upon my house piazza has interested me during the autumn days by the reluctant way in which it drops its leaves. It keeps them green for weeks after the leaflets of the American ivy [*Parthenocissus quinquefolia* (L.)] have taken on a blaze of colors and gone. The last-named vine, as is well known, has its leaves compounded of five leaflets and accommodates their departure by providing each leaflet with a "letter of dismissal" that is composed through the season's

growth. In other words, a line of separation is made at the base of the leaflet so that in its going it may not disturb the others that are situated close by and all at the upper extremity of the petiole. There is no disputing the convenience of this in the plant economy to the lame and lazy, for the injured and indolent may sever their connection and drift down the hedge-row, while their fellows, still green perhaps, stay longer for the finishing touches, and until the vital fluids may be withdrawn under cover of gorgeous decay.

Turning again to the "simple-leaved ampelopsis," with which we started, it is found that the same arrangement is made for the fall of the foliage. The joint is formed at the base of the blade and when the latter falls there remain the stiff petioles for some time to come. Why this double provision for the release of the leaf—first a well-formed suture at the base of the blade and another at the union of petiole with the branch? In other words, why does not this leaf, in form like a linden, observe the method of the linden, or the maple, or the oak? Shall we find an answer in a study of kinship? Because its sister, the "pepper-vine" [*Ampelopsis arborea* (L.)], of the South has compound (bipinnate) leaves and sheds them piece-meal, is that any reason why my *A. cordata* should do the same so far as it can? Its half-sister, the American ivy, we have seen, does likewise, although its leaves are compounded upon a different pattern from those of the "pepper-vine." When we come to look at the Japanese ivy [*Parthenocissus tricuspidata* (Sieb. & Zucc.)] with its leaf-blades only three-lobed usually, but sometimes three-divided, it is found that the same method obtains, and my neighbor's outside chimney has at first a leaf-shingled surface of green, then is splashed with purple, followed by a showing of stiff upturned "straws" and the bricks beneath. It is a little family trait and whether there be one or many leaflets to the blade, the parting with the mother parent is the same.

If the several species were once all in one it is possible that that one had compound leaves and defoliated by means, natural to such leaves. Then in the passing of the years the "simple-leaved ampelopsis" has acquired the present form by enlarging

one leaflet at the expense of the others so that it serves for the whole. In doing this it has not, as yet, taken on the ordinary ways of simple leaves when the time comes to loose its hold upon the vine. We might say that the leaf was still compound, with a single leaflet, or "unifoliate" as is the term used with the lemon and orange of the ordinary sorts, but not of *Citrus trifoliata*, which is evidently compound.

If we were to go far into phylogeny—perhaps beyond our depths—it might be stated that the subject of our note had early left the simple form of leaf, still adhered to by the grapes proper, became fully compound, as are now its nearest to kin, and then underwent a "degeneration," if this word is the one, and assumed a type of foliage that might easily put it in the genus *Vitis*. The stiff defoliated petioles, however, uphold its place with the compound-leaved group—a position fully maintained by other characteristics of the species.

## THE SPREADING OF *SOLIDAGO SPECIOSA* IN THE VICINITY OF YONKERS, N. Y.

BY MRS. JOHN I. NORTHROP

Previous to 1898, the only station known to me in this locality for the above plant was on the crest of the hill south of Mt. Hope Cemetery. This handsome goldenrod was always abundant there in several old fields. In the fall of 1898, I noticed that it was spreading towards the southwest in the direction of the Hudson, as a number of plants were seen on a hillside about a mile south of Hastings village. By the next year it had reached Warburton Avenue on the river bank and a few plants were noticed just across the Yonkers line. Under the date of October 3, 1900, my note-book reads: "*S. speciosa* has spread very rapidly since last year and now solidly covers the slope on the edge of the woods near the trolley terminus. It is still spreading south. It is only two years since I have seen it here at all." The same year I found that it had taken possession of a field on the western slope of the Sawmill River valley, a mile or more to the east. Here, too, only a few plants had been noticed the year before.